Clean Listing of the Claims:

In item 2 of the Office Action, the Examiner requested a clean listing of the claims including larger and clearer renditions of the equations. Such a clean listing is included, as follows:

Clean Listing of Claims:

Claim 1: A method for simulating an electrical network, whereby the inconsistencies in the system of differential equations of the electrical network are detected by the following steps:

providing a computer system;

providing a system of equations describing the technical system, the equations having the form $\underline{f}\left(t,\underline{x}(t),\dot{\underline{x}}(t),\ldots,\underline{x}^{(k)}(t),\underline{p}\right)=\underline{0}$,

including:

$$f_1\left(t,\underline{x}(t),\dot{\underline{x}}(t),\ldots,\underline{x}^{(k)}(t),\underline{p}\right)=0,$$

$$f_2\left(t,\underline{x}(t),\dot{\underline{x}}(t),\ldots,\underline{x}^{(k)}(t),\underline{p}\right)=0,$$

$$\vdots$$

$$f_n\left(t,\underline{x}(t),\dot{\underline{x}}(t),\ldots,\underline{x}^{(k)}(t),\underline{p}\right)=0,$$

wherein $\underline{x}(t)$ and derivatives $\underline{\dot{x}}(t),\ldots,\underline{x}^{(k)}$ thereof in each case have *m* number of elements, and $\underline{p}$ is a parameter vector that can occur in the system of equations; and

executing a test method for providing error information relating to inconsistencies in the system of equations on the computer system, the test method having the following steps 1 to 3:

step 1: setting up a dependence matrix $\underline{\underline{A}}$ with *m* number of columns and *n* number of rows, and setting an element $\underline{A}$ to

$\underline{A}(i,j) \neq 0$ when an i^{th} row of $\underline{f}\left(t,\underline{x}(t),\underline{\dot{x}}(t),\ldots,\underline{x}^{(k)}(t),p\right)$ defined with $\underline{f}_i\left(t,\underline{x}(t),\underline{\dot{x}}(t),\ldots,\underline{x}^{(k)}(t)\right)$ is a function of

a) a j^{th} element of $\underline{x}$ expressed as $\underline{x}_j(t)$; or

b) one of the derivatives of the j^{th} element of $\underline{x}$ defined as $\underline{x}_j^{(s)}(t)$;

and otherwise setting the element $\underline{A}(i,j)=0$;

step 2: determining a set of row ranks each having numbers of those rows of the dependence matrix $\underline{\underline{A}}$ that are mutually dependent and determining a set of column ranks of the dependence matrix $\underline{\underline{A}}$ each having numbers of those columns of

the dependence matrix $\underline{\underline{A}}$ that are mutually dependent if such row ranks and/or column ranks are present; and

step 3: outputting error information containing the numbers contained in each row rank determined in step 2 and in each column rank determined in step 2;

wherein the row rank includes a set C_z of natural numbers i, where $1 \leq i \leq n$, of the matrix $\underline{\underline{A}}$ with the n number of rows and the m number of columns when it fulfils the conditions of:

i) no transversal T of the matrix $\underline{\underline{A}}$ such that C_z is contained in the set of row indices of T, and

ii) for each element c of C_z there is a transversal T of the matrix $\underline{\underline{A}}$ such that $C_z \backslash \{c\}$ is wholly contained in the set of the row indices of T,
and

the column rank comprises a set C_s of natural numbers i, where $1 \leq i \leq m$, of the matrix $\underline{\underline{A}}$ with the n number of rows and the m number of columns when it fulfils the conditions of:

i) no transversal T of the matrix $\underline{\underline{A}}$ such that C_s is contained in the set of row indices of T, and

ii) for each element c of C_s there is a transversal T of the matrix $\underline{A}$ such that $C_s \backslash \{c\}$ is wholly contained in the set of the column indices of T.

Claim 2 (previously presented): The method according to claim 1, which further comprises:

prior to executing step 1:

applying an equation significance list of length of the *n* number in which each equation of the system of equations is assigned at least one of an equation number and an item of equation text information; and

applying a component significance list of length of the *m* number in which each component of a solution vector $\underline{x}$ is assigned at least one of a component number and an item of component text information;

in step 3, outputting at least one of the equation number and the item of equation text information in accordance with the equation significance list instead of outputting the numbers contained in each row rank; and

in step 3, outputting at least one of the component number and the item of component text information in accordance with the

component significance list instead of outputting the numbers contained in each column rank.

Claim 3: A computer running a computer program, comprising computer-executable instructions for executing a method for simulating an electrical network according to claim 1.

Claim 4: A computer running a computer program with computer-executable instructions for executing a method for simulating an electrical network according to claim 2.

Claim 5: A computer system programmed to execute a method for numerical simulation of a technical system according to claim 1.

Claim 6: A computer system programmed to execute a method for numerical simulation of a technical system according to claim 2.

Claim 7: A computer running a computer-readable medium including computer-executable instructions for performing the method according to claim 1.

Claim 8: The method of claim 1, further comprising the step of downloading a computer program product or a computer

program with computer-executable instructions for executing a method for numerical simulation of a technical system according to claim 1 from an electronic data network onto a computer connected to the data network.

Claim 9 (original): The method according to claim 8, wherein the electronic data network is the Internet.

Claim 10: A computer program product or computer program for simulating an electrical network, whereby the inconsistencies in a system of differential equations of the electrical network are detected with the aid of a computer or with the aid of an analog computer and the system of equations is of the form $\underline{f}\left(t,\underline{x}(t),\dot{\underline{x}}(t),\ldots,\underline{x}^{(k)}(t),\underline{p}\right)=\underline{0}$, including:

$$f_1\left(t,\underline{x}(t),\dot{\underline{x}}(t),\ldots\underline{x}^{(k)}(t),\underline{p}\right)=0,$$

$$f_2\left(t,\underline{x}(t),\dot{\underline{x}}(t),\ldots\underline{x}^{(k)}(t),\underline{p}\right)=\underline{0},$$

$$\vdots$$

$$f_n\left(t,\underline{x}(t),\dot{\underline{x}}(t),\ldots\underline{x}^{(k)}(t),\underline{p}\right)=\underline{0},$$

where $\underline{x}$(t) and derivatives $\dot{\underline{x}}(t),\ldots,\underline{x}^{(k)}(t)$ thereof respectively have m number of_elements, and $\underline{p}$ is a parameter vector that can occur in the system of equations; and

the method comprising the following steps:

step 1: setting up a dependence matrix $\underline{A}$ with m number of columns and n number of rows, and setting an element $\underline{A}$ to

$\underline{A}(i,j) \neq 0$ when an i^{th} row of $\underline{f}\left(t, \underline{x}(t), \dot{\underline{x}}(t), \ldots, \underline{x}^{(k)}(t), p\right)$ defined with $\underline{f}_i\left(t, \underline{x}(t), \dot{\underline{x}}(t), \ldots, \underline{x}^{(k)}(t)\right)$ is a function of

a) a j^{th} element of $\underline{x}$ expressed as $\underline{x}_j(t)$; or

b) one of the derivatives of the j^{th} element of $\underline{x}$ defined as $\underline{x}_j^{(s)}(t)$;

and otherwise setting the element $\underline{A}(i,j)=0$;

step 2: determining a set of row ranks each having numbers of those rows of the dependence matrix $\underline{A}$ that are mutually dependent and determining a set of column ranks of the dependence matrix $\underline{A}$ each having numbers of those columns of the dependence matrix $\underline{A}$ that are mutually dependent if such row ranks and/or column ranks are present;

step 3: outputting error information containing the numbers contained in each row rank determined in step 2 and in each column rank determined in step 2; and

the row rank includes a set C_z of natural numbers i, where $1 \leq i \leq n$, of the matrix $\underline{\underline{A}}$ with the n number of rows and the m number of columns when it fulfils the conditions of:

i) no transversal T of the matrix $\underline{\underline{A}}$ such that C_z is contained in the set of row indices of T, and

ii) for each element c of C_z there is a transversal T of the matrix A such that $C_z \backslash \{c\}$ is wholly contained in the set of the row indices of T,

and

the column rank comprises a set C_s of natural numbers i, where $1 \leq i \leq m$, of the matrix $\underline{\underline{A}}$ with the n number of rows and the m number of columns when it fulfils the conditions of:

i) no transversal T of the matrix $\underline{\underline{A}}$ such that C_s is contained in the set of row indices of T, and

ii) for each element c of C_s there is a transversal T of the matrix $\underline{\underline{A}}$ such that $C_s \backslash \{c\}$ is wholly contained in the set of the column indices of T.

Claim 11: The computer program product and computer program according to claim 10, wherein the method for providing error information relating to inconsistencies further comprises:

prior to executing step 1:

applying an equation significance list of length of the *n* number in which each equation of the system of equations is assigned at least one of an equation number and an item of equation text information; and

applying a component significance list of length of the *m* number in which each component of a solution vector $\underline{x}$ is assigned at least one of a component number and an item of component text information;

in step 3, outputting at least one of the equation number and the item of equation text information in accordance with the equation significance list instead of outputting the numbers contained in each row rank; and

in step 3, outputting at least one of the component number and the item of component text information in accordance with the component significance list instead of outputting the numbers contained in each column rank.

Claim 12: A computer interpreting a data carrier to run a computer program product or computer program according to claim 10.

Claim 13: A computer interpreting a data carrier to run a computer program product or computer program according to claim 11.

Claim 14: A computer running the computer program product or computer program according to claim 10 which is carried in a computer-readable medium.

Claim 15: A computer running the computer program product or computer program according to claim 11 which is carried in a computer-readable medium.

Claim 16: A computer system programmed to execute the instructions contained in the computer program product or computer program according to claim 10.

Claim 17: A computer system programmed to execute the instructions contained in the computer program product or computer program according to claim 11.

Claim 18: A method for predicting a behavior of a system, which comprises programming the computer system according to claim 16 with at least one of prescribed system properties, boundary conditions, and starting from prescribed influences on the system, and predicting the behavior of the system by executing the computer program.